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JWARP > Vol.3 No.7, July 2011

OPEN ACCESS

## An Integrated Approach to Address Endemic Fluorosis in Jharkhand, India

PDF (Size: 613KB) PP. 457-472 DOI : 10.4236/jwarp.2011.37056

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### ABSTRACT

This paper presents the grounds for an integrated approach to address endemic fluorosis in Jharkhand, India, an approach that encompasses health monitoring, community-based water systems management, and locally synthesized hydroxyapatite, a sustainable water treatment technology. The results of this study, focusing on kinetics and sorption isotherms, demonstrate that an inexpensive, locally synthesized hydroxyapatite effectively removes fluoride from water and that the Dean Index, a measure of dental fluorosis, of school children provides a sensitive, rapid biometric to track the success of a fluoride water treatment intervention. Previous efforts to manage the fluoride problem in Jharkhand were unsuccessful, largely due to lack of accountability and inadequate community involvement. This paper explores how integrating the production of a locally synthesized hydroxyapatite with community health monitoring via the Dean Index fits into a management strategy with robust accountability mechanisms and community participation that, as historical examples suggest, is likely to succeed in Jharkhand.

### KEYWORDS

Community Participation, Dean Index, Fluoride, Fluorosis, Hydroxyapatite, Rural Water Supply

### Cite this paper

L. MacDonald, G. Pathak, B. Singer and P. Jaffé, "An Integrated Approach to Address Endemic Fluorosis in Jharkhand, India," *Journal of Water Resource and Protection*, Vol. 3 No. 7, 2011, pp. 457-472. doi: 10.4236/jwarp.2011.37056.

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